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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/544,751	04/07/2000	Evan R. Kirshenbaum	10990719-1	2318
22879	7590	12/22/2004	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			JONES, HUGH M	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/544,751	KIRSHENBAUM, EVAN R.
Examiner	Art Unit	
Hugh Jones	2128	

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 8/9/2004.  
2a)  This action is FINAL. 2b)  This action is non-final.  
3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-38 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-38 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_ .

**DETAILED ACTION**

1. Claims 1-38 of U. S. Application 09/544,751 filed 04/07/2000 are presented for examination.

**Claim Interpretations**

2. The broadest reasonable interpretation of the claim language has been given to the claims. Applicants appear to be disclosing binary decision processing such as that used in mentally making decisions or as used in Expert systems. The specification is replete with such terms as "may be" and "etc". It is interpreted that the specification is enabled to the extent of the express teachings in the specification. It is further interpreted that limitations such as those typified by claims 25 and 33, for example, refer to intended use for the decision making process.

**Claim Rejections - 35 USC § 101**

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-38 are rejected under 35 U.S.C. 101 because the claimed invention is an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, *and* tangible result to form the basis of statutory subject matter under this section of the law. The Examiner used the following analysis for whether or not the claims met the requirements of 35 U.S.C. § 101 specific to concrete, useful, *and* tangible:

“Useful” - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. This must be a well established utility. Usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See *Arrhythmia*, 958 F.2d at 1057, 22 USPQ2d at 1036

“Tangible” - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. §101. A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. In the instant case the claims are directed to an abstract methodology or algorithm for decision making not specifically grounded in the technological arts.

“Concrete” - Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

5. Therefore, based upon the forgoing and following analysis the Examiner must provide this rejection based upon the claimed invention failing on a number of points. The recited invention is not specifically in the technological arts. It provides nothing more than abstract method or algorithm for decision making and does not produce a

tangible result. The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)); Fiers v. Revel, 984 F.2d at 1169, 25 USPQ2d at 1605; Amgen, 927 F.2d at 1206, 18 USPQ2d at 1021.

6. Moreover, to the issue of the abstraction the claims do not embody a transformation of the information and though a claim may recite that it is implemented with a general purpose computer it is still disembodied from functional interactions between substantive real world processes resulting in transformations and useful post process results that are concrete. That is they do not transform physical subject matter to a different state not thing using physical steps as required by a "process". These are theoretical operations on data which are not embodied in any physical structure of physical transformation steps. State Street and A.T&T. Where a claim is broad enough to read on both statutory subject matter (machine implementation or physical transformation of physical subject matter) as well as nonstatutory subject matter (an abstract idea), the claims should be rejected since the claims may be amended, in some cases to overcome the rejections, however the instant claims as presented must be delimited by express terms rather than by claim interpretation or inferences based

upon probable teachings in the specification and associated incorporation of essential matter. In re Lintner.

**Claim Rejections - 35 USC § 112**

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, the claim recites computer program type, mathematical expression type, neural network type and belief network type. Such features are not supported in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

**Claim Rejections - 35 USC § 102**

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-24, 26-29, 31, 33-38 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nomura et al..

11. Nomura et al. disclose an inference knowledge extracting apparatus capable of being adapted to a change of input/output data. In a fuzzy rule individual group storing section is stored a group of individuals having a gene string associated with a fuzzy rule of a fuzzy rule storing section by a fuzzy rule gene associating section. A fuzzy rule individual selecting section stochastically selects individuals having a small output error with respect to the input/output data based on a calculation result of fitness obtained by an individual fitness calculating section. A fuzzy rule individual gene manipulating section executes a gene manipulating operation on each individual selected by the individual fitness calculating section. The fuzzy rule gene associating section, individual fitness calculating section, fuzzy rule individual selecting section, fuzzy rule individual gene manipulating section and a rule weight deciding section are functioned, thereby executing an evolutionary adaptation operation to extract a fuzzy rule that is evolutionarily adapted

to the change of the input/output data. See particularly, fig. 5-11, 14, 16 and associated text; col. 1.

12. Claims 1-38 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Terano et al..

13. Terano et al. disclose the use of inductive learning and **genetic algorithms** with interactive and automated phases. The basic idea of the method is to integrate inductive learning to acquire **decision trees** or sets of decision rules and **genetic algorithms** to get the effective features to develop simple, easy-to-understand, and accurate knowledge from noisy data. The unique characteristic of the method is that the offspring (**decision trees**) are evaluated by both human-in-a-loop phase (simulated breeding) and automated simple GA-based phase. The proposed method has been qualitatively and quantitatively validated by a case study on consumer product questionnaire data of 2400 entries with 16 attributes. See particularly fig. 1 and associated text.

14. Claims 1-24, 26-29, 31, 33-38 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Martinka et al..

15. The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

16. Martinka et al. disclose an inference knowledge extracting apparatus capable of being adapted to a change of input/output data. In a fuzzy rule individual group storing section is stored a group of individuals having a gene string associated with a fuzzy rule of a fuzzy rule storing section by a fuzzy rule gene associating section. A fuzzy rule individual selecting section stochastically selects individuals having a small output error with respect to the input/output data based on a calculation result of fitness obtained by an individual fitness calculating section. A fuzzy rule individual gene manipulating section executes a gene manipulating operation on each individual selected by the individual fitness calculating section. The fuzzy rule gene associating section, individual fitness calculating section, fuzzy rule individual selecting section, fuzzy rule individual gene manipulating section and a rule weight deciding section are functioned, thereby executing an evolutionary adaptation operation to extract a fuzzy rule that is evolutionarily adapted to the change of the input/output data. See particularly fig. 2-3 and associated text; col. 9, line 26 to col. 17, line 4.

**Claim Rejections - 35 USC § 103**

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 25, 30, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Terano et al. and in further view of Applicant's Own Admission.

20. The applied art does not expressly disclose the recited intended uses for the decision making process. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

21. It is also inherent that such decisions are associated with the intended uses. It would have been obvious to one of ordinary skill in the art at the time of the invention that the recited intended uses require associated decision making and to use such

decisions because Terano et al. discloses marketing decision analysis (entire document) in such contexts. Furthermore, Applicants have admitted (Background of the invention) that decision making is associated with such intended uses.

**Response to Arguments**

22. Applicant's arguments filed 8/9/2004 have been fully considered but they are not persuasive.

**Response to Arguments – 101 Rejections**

23. Applicant's arguments filed 8/9/2004 have been fully considered but they are not persuasive.

24. Applicants provide boilerplate paragraphs in support of their position against the 101 rejections. Applicants appear to have over interpreted the cited cases. For example, Applicant's interpretation of *Diamond v. Chakrabarty* and *Diamond v. Diehr* is not supported by the decisions.

25. Applicants appear to argue that the algorithm is useful to decision makers for various intended uses (page 13, response). However, Applicants have merely claimed a binary decision process, which is indeed an mathematical algorithm.

26. In response to applicant's argument (bottom, page 12; top, page 13, response) that the algorithm is more than a mere mathematical algorithm, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057

(Fed. Cir. 1993). Applicants have merely claimed a binary decision process, which is indeed an mathematical algorithm. The rejections are maintained.

27. Claims 1-32 are rejected under 35 U.S.C. 101 because the claimed invention is an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, *and* tangible result to form the basis of statutory subject matter under this section of the law. The Examiner used the following analysis for whether or not the claims met the requirements of 35 U.S.C. § 101 specific to concrete, useful, *and* tangible:

“Useful” - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. This must be a well established utility. Usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See *Arrhythmia*, 958 F.2d at 1057, 22 USPQ2d at 1036

“Tangible” - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. §101. A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. In the instant case the claims are directed to an abstract methodology or algorithm for decision making not specifically grounded in the technological arts.

“Concrete” - Another consideration is whether the invention produces a “concrete” result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

28. Therefore, based upon the forgoing and following analysis the Examiner must provide this rejection based upon the claimed invention failing on a number of points. The recited invention is not specifically in the technological arts, It provides nothing more than abstract method or algorithm for decision making and does not produce a tangible result. The claimed invention as a whole must accomplish a practical application. That is, it must produce a “useful, concrete and tangible result.” State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of “real world” value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)); Fiers v. Revel, 984 F.2d at 1169, 25 USPQ2d at 1605; Amgen, 927 F.2d at 1206, 18 USPQ2d at 1021.

29. Moreover, to the issue of the abstraction the claims do not embody a transformation of the information and though a claim may recite that it is implemented with a general purpose computer it is still disembodied from functional interactions between substantive real world processes resulting in transformations and useful post

process results that are concrete. That is they do not transform physical subject matter to a different state not thing using physical steps as required by a "process". These are theoretical operations on data which are not embodied in any physical structure or physical transformation steps. State Street and A.T&T. Where a claim is broad enough to read on both statutory subject matter (machine implementation or physical transformation of physical subject matter) as well as nonstatutory subject matter (an abstract idea), the claims should be rejected since the claims may be amended, in some cases to overcome the rejections, however the instant claims as presented must be delimited by express terms rather than by claim interpretation or inferences based upon probable teachings in the specification and associated incorporation of essential matter. In re Lintner.

#### **Response to Arguments – 112 Rejections**

30. Applicant's arguments filed 8/9/2004 have been fully considered but they are not persuasive.
31. Claim 6 recites computer program type, mathematical expression type, neural network type and belief network type. Such features are not supported in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In response, Applicants broadly refer to 5 pages and then attempt to argue that the rejection is deficient. However, the enablement rejection was given because the mere mention of the various concepts without sufficient disclosure so as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

32. For example, the only mention, in the specification, of neural networks and belief networks, is in a single sentence (lines 20-22, page 10, specification). There is no disclosure of how to apply these technologically complex concepts to the claimed invention. Applicants are reminded that the rejections were applied after a careful review of the specification.

33. Thus, the claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

#### **Response to Arguments – 102 Rejections**

34. Applicant's arguments filed 8/9/2004 have been fully considered but they are not persuasive.

Nomura et al.: Applicant's argument appears to be that the art does not disclose "... obtaining or utilizing pair-wise preferences...". Respectfully, "... obtaining or utilizing pair-wise preferences..." is mere decision making. See Nomura et al.: See particularly, fig. 5-11, 14, 16 and associated text; col. 1.

Terano et al.: Applicant's argument appears to be that the art does not disclose "... obtaining or utilizing pair-wise preferences...". Respectfully, "... obtaining or utilizing pair-wise preferences..." is mere decision making. See Terano et al.: abstract

which discloses that decision making via the use of genetic algorithms is the point of the paper.

35. Applicants have requested that the Examiner properly establish the date of the Terano reference. Applicants are thanked for pointing out the omission of the date. In response to Applicant's request, the Examiner has determined that the date of the Terano et al. reference is 12/1995 (see form 892).

36. Martinka: Applicant's argument appears to be that the art does not disclose "... obtaining or utilizing pair-wise preferences...". Respectfully, "... obtaining or utilizing pair-wise preferences..." is mere decision making. Martinka discloses a decision support system, as discussed in the rejection.

#### Response to Arguments – 103 Rejections

37. Applicant's arguments filed 8/9/2004 have been fully considered but they are not persuasive.

38. Applicants have requested that the Examiner properly establish the date of the Terano reference. Applicants are thanked for pointing out the omission of the date. In response to Applicant's request, the Examiner has determined that the date of the Terano et al. reference is 12/1995 (see form 892).

39. Applicant's arguments amount to general allegations because Applicants have not made any specific arguments other than mere allegation.

**Conclusion**

40. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

41. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**42. Any inquiry concerning this communication or earlier communications from the examiner should be:**

**directed to:**

Dr. Hugh Jones telephone number (703) 305-0023, Monday-Thursday 0830 to 0700 ET, **or** the examiner's supervisor, Kevin Teska, telephone number (703) 305-9704. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, telephone number (703) 305-3900.

Art Unit: 2128

**mailed to:** Commissioner of Patents and Trademarks

Washington, D.C. 20231

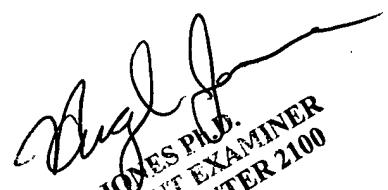
**or faxed to:** (703) 308-9051 (for formal communications intended for entry) **or**

(703) 308-1396 (for informal or draft communications, please label  
"PROPOSED" or "DRAFT").

Dr. Hugh Jones

Primary Patent Examiner

December 11, 2004



HUGH JONES P.J.D.  
PRIMARY PATENT EXAMINER  
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